

**IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF MISSISSIPPI
HATTIESBURG DIVISION**

**FEDERAL INSURANCE COMPANY, as
subrogee of Forrest County General Hospital**

PLAINTIFF

VERSUS

CIVIL ACTION NO. 2:08cv156KS-MTP

GENERAL ELECTRIC COMPANY

DEFENDANT

MEMORANDUM OPINION AND ORDER

This cause is before the Court on the motion to exclude testimony of Plaintiff's expert witnesses [Doc. #39] (September 8, 2009) filed by Defendant General Electric Company ("GE"). GE seeks the exclusion of the opinion testimony of Tobias Gilk and Robert Junk. For reasons set forth below, the motion should be **denied**.

Also before the Court is the motion to exclude testimony of Defendant's expert witness [Doc. #41] (September 8, 2009), filed by the Plaintiff Federal Insurance Company ("FIC"). The Plaintiff seeks exclusion of the opinion testimony of William Einziger. For reasons to follow, the motion should be **denied**.

I. FACTUAL BACKGROUND

General Electric Capital Corporation ("GE Capital") leased a .07 Tesla OpenSpeed MRI machine to Forrest General Hospital, Plaintiff's subrogee, in October 2002. The installation and operation of a MRI machine requires building and site specifications. GE Capital in its lease specifies that the "Lessee shall be responsible for making the site ready for installation in

compliance with Lessor's written specifications." Pl.'s Resp. Mot. Summ. J., Ex. 17 [Doc. # 51-19]. GE provides an Installation Manual that provides the specifications and requirements. In this case, however, GEMS entered into a Renovation Contract with the hospital. Pl.'s Resp. Mot. Summ. J., Ex. 16 [Doc. # 51-18]. The Work Scope of this contract included the addition of ventilation systems. [Doc. # 40-2 at 45]. Caffey, Inc. was contracted to design and build the improvements, and the parties dispute whether GEMS maintained significant control over the system's design or delegated that responsibility to Caffey.

One of the necessary improvements described by the Installation Manual is a cryogenic vent system. This vent and continuous power for cooling are required for the safe operation of the MRI machine. The MRI contains a superconducting magnet that must be maintained at a very low temperature (4.2 degrees Kelvin or minus 452 degrees Fahrenheit) to effectively operate. Compl. ¶ 14. To maintain this temperature the magnet is surrounded by liquid helium. If the machine loses power for more than 48 hours, the liquid helium gasifies causing the pressure to increase. The cryogenic vent system is installed to relieve the pressure by allowing the helium gas to vent to the outside of the building. This process is called a "quench." Quenches can damage the magnet and refilling the helium vessel to restore superconductivity is costly and time consuming. For that reason, GEMS warns in its Installation Manual that the hospital should provide cooling 24 hours a day, 7 days a week. Def.'s Br. Supp. Mot. Summ. J. at 3, 10 [Doc. # 38]. The Installation Manual also warns that the customer is responsible for the cost of restoring the magnet's superconductivity in the case of a magnet quench due to a power loss of 48 hours or more. Def.'s Br. Supp. Mot. Summ. J., Ex. I, sub-Ex. 1 at 63 [Doc. #40-10].

On August 29, 2005, Hurricane Katrina struck, and the hospital lost power that morning.

The MRI was not attached to a alternate power source, but the hospital did have operative, but limited, generators. It is undisputed that when GE's Field Service Engineer, Rick Miley inspected the MRI on August 31, two days after the loss of power, the magnet had quenched. Pl.'s Resp. Mot. Summ. J. at 4 [Doc. # 51]. In October 2005, GE sent in its team of technicians to refill the helium vessel and restore superconductivity. These attempts were unsuccessful due to a molecular level leak in the seam or weld of the helium vessel. It is undisputed that the quench caused the vessel leak as the MRI was working properly before the storm, but it is contested *why* the quench cracked the vessel.

FIC bases its theory about why the vessel cracked on an initial report by GE's Field Service Engineer Rick Miley, who consulted several other GE engineers during the course of his analysis, including GE's Senior Cryogenics Engineer Roy Mangano. Pl.'s Resp. Mot. Summ. J. at 4-5 [Doc. # 51]. The report suggests that water blew into the roof vent during the hurricane and pooled by a burst disk inside the vent's transition elbow.¹ This burst disk is designed to rupture when a certain pressure is reached due to the escaping helium gas. Plaintiff alleges that as the incredibly cold helium gas reached the burst disk, the water on the other side of the burst disk was instantly frozen, forming an ice plug over the burst disk and prohibiting the rapid escape of helium gas. This ice block caused over-pressurization in the helium vessel in excess of its design limits which ultimately caused the vessel leak. GE argues that this theory fails to explain the effect of the 1/8" weep hole in the transition elbow that drains off any water. Def.'s Br. Supp. Mot. Summ. J. at 28 [Doc. #38]. While GE's head of mechanical engineering says that

¹ The parties refer to the transition elbow by several names, including vent adapter, discharge plenum, and vent elbow.

the ice block theory is possible, he maintains that further testing and analysis would be needed to prove this theory to some degree of scientific certainty. Def.'s Br. Supp. Mot. Summ. J. at 5 [Doc. # 38]. FIC counters that some of the vent plans show a drain plug or a brass fitting and not a weep hole. FIC also disputes the significance of a weep hole, claiming that the water in the vent system would have frozen so quickly that a weep hole would have had little effect. Pl.'s Resp. Mot. Summ. J. at 8-9 [Doc. #51].

Regardless of which drain system was in place, FIC's main contention is that the quench vent system's design fell below the industry's standard of care because "wind driven rain could blow into the quench vent." Pl.'s Resp. Mot. Summ. J. at 12 [Doc. # 51]. FIC contends that water in the vent system was a foreseeable problem and that GE's design fell below its standard of care. In sum, FIC contends that the quench vent was negligently designed and that GE knew or should have known of the consequences of that negligent design.

FIC has offered the expert testimony of two architects that specialize in MRI suite design to testify as to the quench vent system's failure, the likelihood of the "ice plug theory," and alternative designs for the quench vent system, particularly the roof cap, used by other MRI manufacturers. GE has offered a cryogenic engineer expert to challenge the methods used by FIC's experts and disclaim the theory that water would pool and freeze by the burst disk.

II. STANDARD OF REVIEW

Federal Rule of Evidence 702, amended post-*Daubert* in 2000, provides that a witness "qualified as an expert ... may testify ... in the form of an opinion ... if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and

methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.” See generally *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579 (1993). “*Daubert* . . . assigned the trial court a gatekeeper role to ensure such testimony is both reliable and relevant.” *Hodges v. Mack Trucks, Inc.*, 474 F.3d 188, 194 (5th Cir. 2006). “This gate-keeping obligation applies to all types of expert testimony, not just scientific testimony.” *Pipitone v. Biomatrix, Inc.*, 288 F.3d 239, 244 (5th Cir. 2002) (citing *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 147 (1999)).

“Many factors bear on the inquiry into the reliability of scientific and other expert testimony. In *Daubert*, the Supreme Court offered an illustrative, but not an exhaustive, list of factors that district courts may use in evaluating the reliability of expert testimony.” *Id.* These factors include:

- (1) whether the expert’s theory can be or has been tested;
- (2) whether the theory has been subject to peer review and publication;
- (3) the known or potential rate of error of a technique or theory when applied;
- (4) the existence and maintenance of standards and controls; and
- (5) the degree to which the technique or theory has been generally accepted in the scientific community.

Moore v. Ashland Chem. Inc., 151 F.3d 269, 275 (5th Cir. 1998) (en banc). Subsequently, in *Kumho Tire Co.*, the Supreme Court noted that the *Daubert* analysis is “flexible,” and that “the factors identified in *Daubert* may or may not be pertinent in assessing reliability, depending on the nature of the issue, the expert’s particular expertise, and the subject of his testimony.” 526 U.S. at 150. The district court’s responsibility is “to make certain that an expert, whether basing testimony upon professional studies or personal experience, employs in the courtroom the same

level of intellectual rigor that characterizes the practice of an expert in the relevant field.” *Id.* at 152.

“Although the *Daubert* analysis is applied to ensure expert witnesses have employed reliable principles and methods in reaching their conclusions, the test does not judge the expert conclusions themselves.” *Guy v. Crown Equip. Corp.*, 394 F.3d 320, 325 (5th Cir. 2004).

“[T]he trial court’s role . . . is not intended to serve as a replacement for the adversary system: ‘Vigorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence.’” *Primrose Operating Co. v. Nat’l Am. Ins. Co.*, 382 F.3d 546, 562 (5th Cir. 2004) (quoting *United States v. 14.38 Acres of Land*, 80 F.3d 1074, 1078 (5th Cir. 1996)).

Nonetheless, “[t]he proponent of expert testimony . . . has the burden of showing that the testimony is reliable,” *United States v. Hicks*, 389 F.3d 514, 525 (5th Cir. 2004), and must establish the admissibility requirements “by a preponderance of the evidence.” *United States v. Fullwood*, 342 F.3d 409, 412 (5th Cir. 2003).

III. APPLICATION AND ANALYSIS

In the pending motions, GE seeks to exclude the testimony of both Tobias Gilk and Robert Junk, and FIC seeks to exclude the testimony of William Einziger. The Court will evaluate the proposed testimony of each witness in turn.

A. Plaintiff’s Experts: Tobias Gilk and Robert Junk

Robert Junk, an architect, is Vice-President and founding principal of MRI-Planning with

28 years of medical and imaging design experience. Junk has provided design assistance to medical facilities nationwide. Junk has authored numerous articles and has spoken at national meetings of professional imaging and healthcare organizations on the topic of MRI build-out.

Tobias Gilk is an architect with more than a decade of specialization in MRI imaging equipment, safety, and suite design. His curriculum vitae reveals that he has written articles on these topics for radiology and design trade publications. He also served as Specialty Imaging Consultant for the drafting of the new Department of Veterans Affairs National Design Guidelines for Radiology. Gilk has provided design assistance to medical facilities nationwide.

FIC offers the testimony of Gilk and Junk for two purposes: 1) to testify as to alternative weatherproof roof cap designs and the deficiencies of the vent system at Forrest General, and 2) to testify as to how the magnet was damaged, namely, the “ice plug theory.” GE contends they are not reliable to testify as to the second issue, the causation of the magnet damage, based on their lack of education and experience as well as the unreliable scientific analysis conducted. Mot. to Exclude Expert Testimony [Doc. # 39].

GE’s first argument is that, as architects, Gilk and Junk have no training in engineering or cryogenics, and therefore lack the education and experience to offer their opinions about the likelihood of the “ice plug theory.” Mot. to Exclude Expert Testimony at 8 [Doc. # 39]. In response, FIC argues that they will not explain how and why quenches occur, but rather, “why GE’s helium exhaust vent failed to safely exhaust from the building the gas generated by the quench [of] Forrest General’s MRI.” Pl.’s Resp. at 12 [Doc. # 50].

As noted above, both Gilk and Junk have extensive backgrounds in quench vent design sufficient to qualify them as experts in the field of MRI suite build-out. They are not being

called to testify that a quench occurred— this is undisputed. Nor are they being called to describe the physics behind helium gasification. Instead, they are being called to offer their opinions as to why the quench vent system and the roof cap were ineffective at allowing helium gas to escape following the quench. The experts have knowledge of MRI suite design specifications provided by several MRI manufacturers, including Siemens, Hitachi, and Toshiba. [Doc. # 40-16 at 13]. They have provided design assistance and peer review evaluations at many healthcare facilities. Therefore the Court finds that Gilk and Junk have adequate relevant education and experience to be sufficiently reliable experts.

Secondly, GE contends that Gilk and Junk have not utilized reliable scientific analysis to reach their conclusions, but instead, merely adopt and reprint the findings in GE's post-storm preliminary incident report. GE argues that they did not conduct any type of calculation or analysis to support the ice plug theory such as determining how much water would have pooled by the burst disk, particularly with a weep hole to drain off water, or the temperature or flow rate of helium gas. GE argues that they resort to circular logic: they theorize that there must have been at least three inches of water because the burst disk failed to rupture. They also fail to consider why the bleed line from the lower pressure PSI relief valves would not freeze instead of the alleged pool of water. In response, FIC argues that Gilk and Junk are not using circular logic, but deductive reasoning. Pl.'s Resp. at 19 [Doc. # 50]. The helium vessel was over-pressurized during the quench, and so they reason that something was preventing the escape of the helium gas. The vent system's design allowed the entry of wind-blown rain, and the cold helium gas had the ability to freeze the water, so they deduce that the "something" preventing the escape of helium gas was an ice plug.

The Court does not find that the analysis used by Gilk and Junk was unreliable. Gilk and Junk relied on their knowledge and experience with MRI vent systems, photographs and construction records for the particular vent system and cap at Forrest General, climatological data for wind-driven rain generally and for Hattiesburg, Mississippi, specifically during Hurricane Katrina, and GE's preliminary incident report. Pl.'s Resp. at 14 [Doc. # 50]. Analysis of this information allowed Junk and Gilk to form a relevant and reliable opinion as to how water could have entered the quench system. While it is correct that Gilk and Junk are not experts in cryogenics, they are not being offered to testify about what occurs during a quench. The experts reasonably rely on GE's experts' opinion in its preliminary incident report that a quench occurred and the helium vessel ruptured due to over-pressurization. Gilk and Junk's opinions concern the design of the quench vent system and the consequences of a design that allows for the entry of wind-blown rain.

Nor does the Court find that the dispute over the existence or nonexistence of the weep hole affects the reliability of Gilk and Junk's opinions. Gilk's theory that a weep hole could be obstructed with an environmental contaminate is supported by his own experience. Gilk Dep., Ex. F at 95-96 [Doc. # 40-7]. Certainly, Gilk and Junk's failure to account for the presence of the weep hole in their initial report may go to the credibility of their conclusions. See *Voth v. State Farm Fire and Cas. Ins. Co.*, 2009 WL 411459 (E.D. La. 2009) (Feb. 17, 2009) ("The original reliance on the incorrect facts goes to the weight of his testimony not the admissibility of the testimony itself."). However, Rule 702 is designed to test the reliability of the experts' methods and relevant experience, not the strength or weakness of their conclusions.

Finally, the Court is not persuaded of Junk and Gilk's unreliability by their failure to

know the exact amount of water that was pooled by the burst disk or the exact temperature and flow rate of the helium gas at the time of the quench. In the end, the amount of water, if any, that was pooled at the burst disk at the time that the magnet quenched cannot be known or reproduced by either party. However, Gilk and Junk, relying on their experience and their analysis of the quench vent design and climatological data, have concluded that water could enter the quench vent. They have also concluded that blockage of a weep hole by any type of environmental contaminant could potentially allow this water to pool. They then rely on the common sense principle that water freezes when exposed to cold air. Finally, they conclude that the ice could create a potential block to the escaping helium gas. It is the province of the jury to determine if the unknown data detracts from the credibility of the experts' conclusions and if the conclusions offered by the experts are correct. Therefore, the motion to exclude the expert testimony of Gilk and Junk should be denied.

B. Defendant's Expert: William Einziger

William Einziger is a cryogenic engineer with over 25 years experience in cryogenic design. For the past 14 years, he has worked for GE as a cryogenic engineer, and in the course of his employment, he contributed to the design of the .07T Openspeed MRI including the design of the cryogenic insulation for the magnet. Def.'s Resp. at 10 [Doc. # 49]. Currently he manages the MRI design team and supervises the engineers that provide technical support for product issues relating to the .07T Openspeed MRI. Def.'s Resp. at 11 [Doc. # 49]. He has received degrees in mechanical engineering from University of Florida and Florida International University.

GE summarizes the three general areas of his expected testimony as follows:

1. The damage to the [MRI] was the result of failure to provide constant electrical power necessary to insure continuous water cooling for the Shield/ Cryo Cooler Compressors, which caused the magnet to quench.
2. The design configuration of the subject MRI system, including specifications for the cryogen venting system and vent stack is a reasonably safe and effective design, proven in the field. The systems' design does not allow water to collect in the area of the magnet discharge plenum.
3. Even assuming that water was somehow present in the discharge plenum, plaintiff's purported experts, Junk and Gilk, have offered no evidence to indicate how much water was actually present, nor have they set forth a scientific explanation for how such water would freeze or cause damage to the magnet as suggested. Plaintiff's experts, and those whose findings on which they rely, did not present a scientific analysis necessary to support such findings. Their theory as to how the damage to the magnet occurred is mere conjecture.

GE's Rule 26 Disclosure at 2 [Doc. # 18].

FIC contends that Einziger cannot testify on any of the three topics because he has admitted that he does not know what happened. Pl.'s Resp. at 9 [Doc. # 42]. FIC argues that Einziger fails to put forth an affirmative theory or alternative explanation. Pl.'s Resp. at 16 [Doc. # 42]. Next, FIC contends that despite Einziger's qualifications in MRI design, he has no experience with the design or functionality of the quench vent system or with weatherproof roof cap designs. GE does not describe any involvement by Einziger in the production of the Installation Manual specifications or the proposed design of the vent exhaust system. GE instead argues that the very existence of GE's specifications to limit the entry and facilitate the drainage of water, *i.e.*, the 90 degree angle of the roof cap along with the chamfered termination, the mesh screen, and the transition elbow weep hole, demonstrate that at some point GE engineers analyzed the effect pooled water may have on the ability of the vent system to properly function. GE further argues that the system has been problem-free so that GE's engineering

team has had no reason to further analyze or test the efficacy of the vent system specifications. Def.'s Resp. at 11 [Doc. # 49].

Given Einziger's qualifications, his testimony as to the first topic, the loss of power as the cause of the system quench, is certainly reliable.² Einziger's involvement in MRI design certainly qualifies him to speak to the electrical requirements necessary to maintain the appropriate temperature and magnetic field. As an engineer involved with MRI design and subsequently with technical support and product issues that arose for the MRI at issue, it follows that Einziger would be able to speak to other requirements besides electricity that are necessary for the safe operation of the MRI. The cryogenic vent system that allows gasified helium to exit the vessel is one such requirement. GE's specifications and design features to limit the entry and facilitate the drainage of water, *i.e.*, the 90 degree angle of the roof cap along with the chamfered termination, the mesh screen cover, and the transition elbow weep hole are features similarly related to the safe operation of a MRI, and thus, within Einziger's expertise. While Einziger has not been actively involved in quench vent design, and may not be qualified to talk about specific alternative roof cap designs used by other manufacturers, he can speak to specifications recommended by GE to allow for the safe operation of the MRI. Further, he can give his opinion that the passive design features of the MRI would not allow water to collect. This is a conclusion, however, that the jury may accept or reject.

Also, Einziger would certainly be qualified as a cryogenic engineer and the designer of the MRI at issue to challenge the opinions of Gilk and Junk for failing to consider all of the

²Of course, the Court also notes that the parties do not dispute that the loss of power led to the quench.

conditions in the transition elbow at the time of the quench. Einziger's testimony should not be excluded because he cannot affirmatively say why the quench destroyed the helium vessel. Ultimately it is the jury that must reach a conclusion as to what caused the damage to the helium vessel, and Einziger's testimony will help the jury decide.

Finally, FIC moves to exclude any use of the "water-drip" test conducted in the laboratory to determine the rate at which an 1/8 inch weep hole can drain water. FIC contends that this test is unreliable because it was conducted at laboratory room temperature and does not account for the cold helium gas that was potentially venting through the transition elbow and therefore bears little resemblance to the actual occurrence. Pl.'s Resp. at 7-9 [Doc. # 42]. FIC's issues with the water drip test can certainly be presented to the jury on cross-examination. The Court does not find that it should be excluded as unreliable under Federal Rule of Evidence 702 or as unfairly prejudicial under Federal Rule of Evidence 403. Therefore, the motion to exclude Einziger's testimony should be denied.

IV. CONCLUSION

For the reasons given above, the Court has reached the following conclusions: (1) GE's motion to exclude the testimony of Robert Junk and Tobias Gilk is denied; and (2) FIC's motion to exclude the testimony of William Einziger is denied except as to the opinions relating to alternate roof cap designs.

IT IS, THEREFORE, ORDERED AND ADJUDGED that GE's motion to exclude testimony of Plaintiffs' expert witnesses [Doc. #106] is **denied**.

IT IS, FURTHERMORE, ORDERED AND ADJUDGED that the Plaintiffs' motion is

denied.

SO ORDERED AND ADJUDGED on this, the 9th day of December, 2009.

s/Keith Starrett
UNITED STATES DISTRICT JUDGE